Space Weather Forecast

Issued on Thursday, 23 May 2024 at 01:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Isolated Moderate-class flares likely throughout. Slight chance Minor Geomagnetic Storm days 2-3 (24-25 May) from the arrival of fast winds from a coronal hole.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: The activity was Moderate, with the largest Moderate-class flare observed from a region that is now on the far side of the Sun. There are currently seven sunspot regions on the visible disc. Additional Moderate class flares were observed from a large and magnetically complex region in the southwest quadrant, and also from other slightly smaller and less magnetically complex regions, with the overall background solar activity levels at Common class levels throughout.

Various coronal mass ejections (CMEs) were observed in imagery, and none are currently expected to be Earth-directed. However, a recent partial filament liftoff in the southeast quadrant has generated a CME, which will be analysed once more imagery is available, although the CME is thought unlikely to be Earth directed.

Solar Wind / Geomagnetic Activity: Solar winds have been indicative of ongoing slow wind conditions. The solar wind speed started and ended the day close to 400 km/s, peaking at 428 km/s at 22/0319 UTC, declining in-between to around 330 km/s. The strength of the solar winds magnetic field was predominantly weak, briefly peaking at moderate levels in the evening. The north-south component favoured a northward orientation, although did temporarily become weakly southward in the evening. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is likely to continue with isolated Moderate flares possible each day, and a slight chance of rising to High due to any Strong-class flares. These most likely from the two larger spots on the disc, both in the southwest, but also possibly from a region in the southeast which has potential for magnetic complexity. Two returning regions are also expected on the northeast by the end of the period, once of which was the source of five Strong-class flares as it rotated off the visible disc a couple of weeks ago. However, it is uncertain how much of these regions have survived their transit across the far-side.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Space Weather Forecast

Solar Wind / Geomagnetic Activity: There are no Earth directed CMEs currently expected. Slightly elevated to background solar winds are expected to persist today and tomorrow (24-25 May), before the onset of any coronal hole enhancement from a feature far to the north. The strength and timing of any enhancement is low confidence. Mainly Quiet activity is expected with only isolated Unsettled intervals, but likely rising to Active with a slight chance of Minor Storm intervals from any coronal hole enhancement, most likely day 3 (25 May). Later day 4 (26th) any coronal hole influence is expected to wane.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background with only a very slight chance of rising to S1/Minor Radiation Storm.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	60	55	50
Very Active	R3 to R5 X	No	10	5	5	1

Solar Radiation Storms - (High Energy Protons):

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Met Office

Space Weather Forecast

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	20	20	10	10
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.